State of California
California Environmental Protection Agency

AIR RESOURCES BOARD

STAFF REPORT

PROGRESS TOWARDS APRIL 2009 DEADLINE FOR ENHANCED VAPOR RECOVERY PHASE II SYSTEMS

APRIL 2008

Prepared by Monitoring and Laboratory Division

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EXECUTIVE SUMMARY

The Enhanced Vapor Recovery (EVR) program requires gasoline dispensing facilities (GDFs) to upgrade equipment to meet several technology-forcing standards. The EVR regulations were adopted in March 2000 and are identified as a required measure in the 1999 settlement of a lawsuit challenging implementation of the 1994 State Implementation Plan (SIP). Emission reductions from EVR vapor recovery systems will total 372 tons/day of reactive organic gases (ROG) statewide once fully implemented.

The EVR requirements are being phased in from 2001 to 2010. Two major equipment upgrades occurred in 2005 and 2006. The next EVR upgrade for Phase II vapor recovery affecting approximately 12,000 GDFs must be completed by April 1, 2009. This report discusses progress made so far in implementing EVR Phase II, as well as potential barriers towards compliance with the April 2009 deadline.

Several GDF operators and gasoline marketers' associations have requested an extension of the April 2009 compliance date. Staff's analysis indicates that EVR equipment and contractor resources are available now to meet the deadline.

Staff recommends holding firm on the April 1, 2009 deadline. This status report discusses ARB staff and air district efforts already in place to expedite implementation as well as recommended actions for the next 11 months.

I. OVERVIEW

A. Introduction

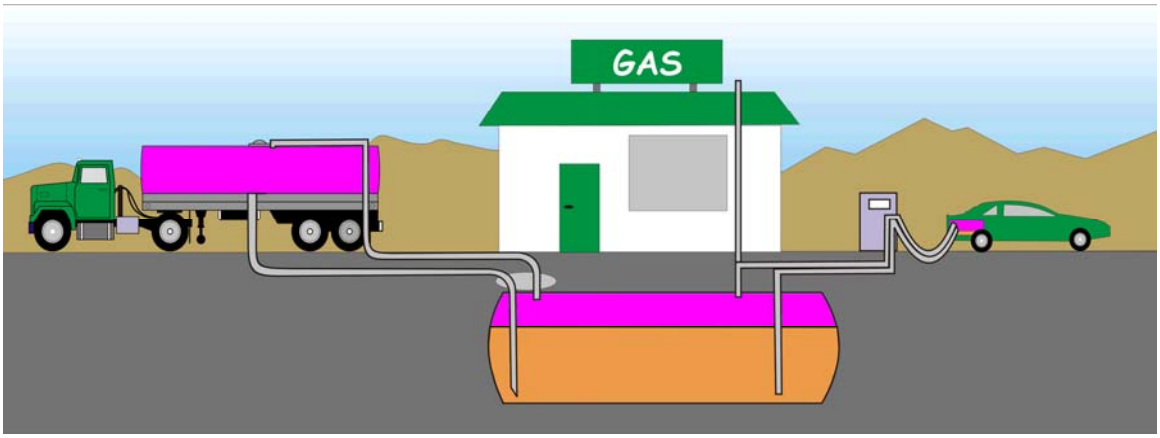
In March of 2000, the Air Resources Board (ARB or Board) approved the Enhanced Vapor Recovery (EVR) regulation amendments. The regulations established new standards for vapor recovery systems to reduce emissions during storage and transfer of gasoline at gasoline dispensing facilities (GDFs or service stations). The EVR requirements are being phased in from 2001 to 2010.

This report provides staff's assessment of progress toward meeting the Phase II EVR deadline of April 1, 2009. This update was requested by ARB Chairman Mary Nichols in response to several letters from gasoline marketers and associations in summer and fall of 2007 requesting a delay in the compliance date. An example is the letter from Jay McKeeman of the California Independent Oil Marketers Association dated August 30, 2007 (Appendix 1).

B. Vapor Recovery at Service Stations

Gasoline vapor emissions are controlled during two types of gasoline transfer. Phase I vapor recovery collects vapors when a tanker truck fills the service station's underground tank. Phase II vapor recovery collects vapors during vehicle refueling. Phase I and Phase II vapor recovery equipment also help control emissions from gasoline storage at service stations. Phase I and Phase II vapor recovery systems have been installed in most California GDFs for over 20 years. Systems that have not been certified to the meet the EVR standards are referred to as "pre-EVR" vapor recovery systems.

Figure 1
Phase I and Phase II Vapor Recovery



The ARB and districts have shared implementation of the vapor recovery program since the 1970s. ARB staff certifies prototype Phase I and Phase II vapor recovery systems installed at operating station test sites. District rules and state law require that only ARB-certified systems be installed. District staff issues permits to service stations and requires the vapor recovery system to be tested upon installation. District staff also conducts regular inspections to check that these systems are operating as certified.

The vapor recovery requirements affect a multitude of stakeholders. These include the vapor recovery equipment manufacturers, gasoline marketers who purchase this equipment, contractors who install and maintain vapor recovery systems and air pollution control districts who enforce vapor recovery rules. In addition, California-certified systems are required by most other states and many countries.

C. Enhanced Vapor Recovery Regulation

Petroleum marketing operations are one of the largest stationary source categories of reactive organic gases (ROG) emissions. Pre-EVR vapor recovery systems are responsible for 347 tons/day of 2010 ROG emission reductions statewide. The EVR amendments to the vapor recovery program provide additional emission reductions of 25 tons/day for a total of 372 tons/day. This translates into gasoline savings of 120,000 gallons/day and cost savings of $420,000/day (assuming gasoline price of $3.50 per gallon).

In addition to emission reductions, EVR provides the following benefits:

a. Improved equipment reliability due to more stringent certification tests.
b. “Dripless nozzles” that reduce spillage by more than 50 percent.
c. Control of fugitive emissions during gasoline storage.
d. Compatibility with vapor recovery systems on newer vehicles (ORVR).
e. Vapor recovery system monitoring via in-station diagnostics (ISD).

D. Past EVR Deadlines

The EVR requirements are being phased in over several years, and have already resulted in two equipment upgrades of service station equipment.

1. Phase I Upgrade

All stations (except those in ozone attainment areas) were required to upgrade to EVR Phase I systems by April 2005. The equipment involved in the Phase I EVR modifications were the fittings where the cargo tanks connect to the station’s underground storage tank (UST), as well as the vent valve on the UST vent pipe. These components were already present for the pre-EVR systems, and thus the

Phase I EVR upgrades involved installing EVR versions of these components. The cost for the Phase I upgrade was typically around $6,000.

2. Onboard Refueling Vapor Recovery (ORVR) Compatibility Upgrade

The federal Clean Air Act Amendments included provisions to install vapor recovery systems on vehicles. ORVR systems initiated in the 1998 vehicle model year, and were phased-in for most gasoline powered vehicles by the 2006 model year. In an ORVR vehicle, refueling vapor emissions are captured on the vehicle carbon canister, rather than being routed through the fillneck to the vapor recovery nozzle. ARB field studies conducted in 1999 verified that fueling ORVR vehicles with certain types of Phase II vapor recovery systems would lead to excess emissions. One of the primary EVR standards requires EVR Phase II systems to be "compatible" or cause no excess emissions when fueling ORVR vehicles.

In November 2004, the Board approved extensions to the ORVR compatibility deadlines. The reason for more time was to wait for certification of a Phase II system that met all of the EVR Phase II requirements, not just the ORVR compatibility standard. This would avoid the need to upgrade Phase II systems twice.

Although one EVR Phase II system was certified in May 2005, very few GDFs installed the EVR Phase II system to meet ORVR compatibility deadlines. Most GDF operators chose to do the "two-step" upgrade, and wait to see what other EVR Phase II systems might be certified before the April 2009 deadline.

Almost all GDFs complied by switching from an "assist" system which has a vapor pump in each dispenser to a pre-EVR "balance" Phase II system, which does not have a dispenser vapor pump. The October 1, 2004 staff report for the November 2004 ORVR compatibility schedule amendments estimated equipment and installation costs to convert a six dispenser non-compatible assist system to a compatible pre-EVR balance system to be $16,000. Staff estimated a second upgrade of the pre-EVR balance system to meet EVR Phase II and ISD in the range of $22,800 to $34,800. Thus the total cost of two upgrades was estimated to be $38,800 to $50,800. The one-step upgrade to an EVR Phase II and ISD system was estimated at $40,700.

After the completion of the ORVR compatibility upgrade, about 90% of the GDFs in California were operating with a pre-EVR balance system.

II. EVR PHASE II IMPLEMENTATION STATUS

The final phase of EVR requires that most stations upgrade to EVR Phase II systems by April 2009 and in-station diagnostics (ISD) by September 2009. The EVR Phase II upgrade requires different gasoline dispenser equipment and

installation of a pressure management device. ISD installation involves placement of sensors in the dispensers and conduit to the monitor console. Lower-throughput stations have until September 2010 to install ISD. Staff expects most stations subject to ISD requirements will install ISD at the same time as the EVR Phase II upgrade to avoid two cycles of permitting and minimize costs.

For the last several years, staff has estimated that there are 13,000 GDFs subject to EVR Phase II vapor recovery. More recent data collected from the air districts shows this number to be about 12,000. The number of GDFs subject to EVR Phase II in each district is provided in Table 1.

Table 1
Number of Gasoline Dispensing Facilities Subject to EVR Phase II Requirements

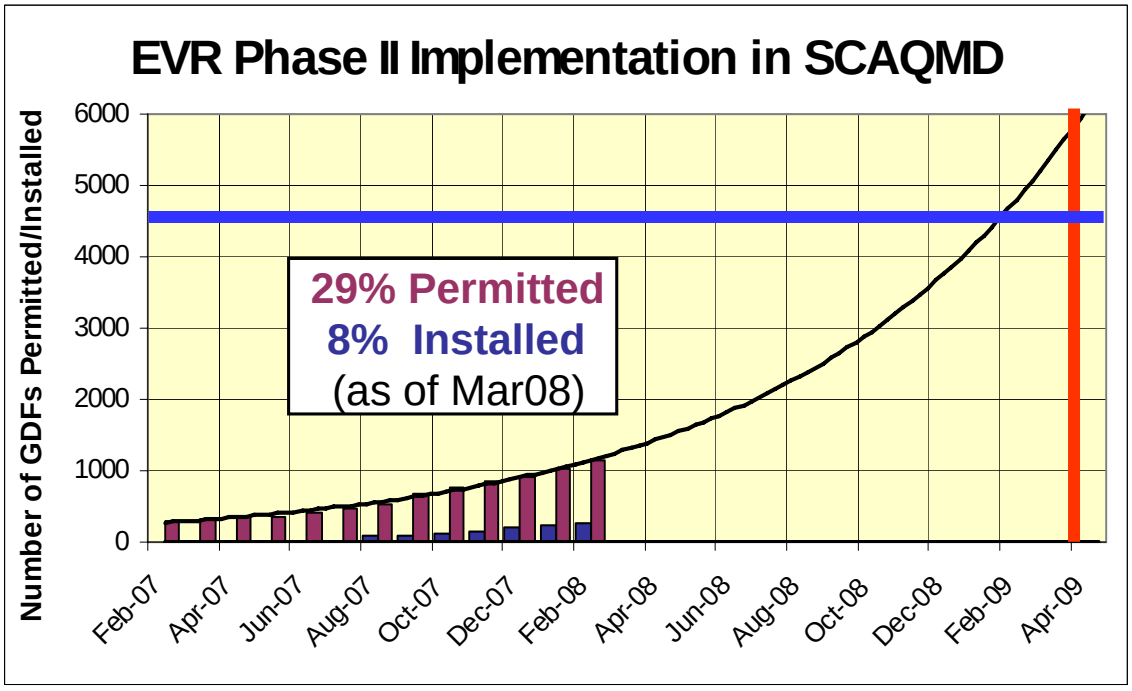
Air District	Number of GDFs	Percentage
So. Coast	4500	39.1%
Bay Area	2078	18.1%
San Joaquin	1828	15.9%
San Diego	843	7.3%
Sacramento	399	3.5%
Monterey	300	2.6%
Ventura	236	2.1%
Mojave Desert	223	1.9%
Santa Barbara	181	1.6%
Placer	180	1.5%
Yolo-Solano	138	1.2%
Antelope Valley	119	1.0%
Kern	86	0.7%
Butte	85	0.7%
No. Sierra	76	0.7%
Imperial	75	0.7%
El Dorado	65	0.6%
Feather River	64	0.6%
Tehama	37	0.3%
Great Basin	35	0.3%
Tuolumne	29	0.3%
Amador	28	0.2%
No. Sonoma	21	0.2%
Glenn	19	0.2%
Mariposa	15	0.1%
Colusa	14	0.1%
Calaveras	3	0.0%
Lassen	1	0.0%
Modoc	NA	
Shasta	NA	
TOTAL	**11,678**	100%

Note that the three air districts that are compliant with the state ozone standard are exempt from the Phase II and ISD requirements for GDFs installed prior to April 2005. New stations and stations undergoing major modifications must meet EVR requirements. These three air districts are Lake County, Mendocino County and North Coast Unified.

Also, districts that have recently been designated as non-attainment have until November 2010 to meet EVR deadlines. These districts are Siskiyou County, Northern Sonoma and San Luis Obispo.

As can be seen, the majority of the GDFs are located in the South Coast Air Quality Management District (SCAQMD). The SCAQMD staff has provided monthly updates on the number of stations in the EVR Phase II permit process and the number of completed EVR Phase II installations since February 2007. The SCAQMD has 4500 GDFs subject to EVR Phase II requirements. As illustrated in Figure 1 below, as of the end of March 2008, 29% of the total GDFs in the SCAQMD have been issued an authority to construct to install an EVR Phase II system, and 8% are now operating with an EVR Phase II system.

Figure 2



III. POTENTIAL BARRIERS TO MEETING APRIL 2009 DEADLINE AND ACTIONS TO ADDRESS THESE BARRIERS

A. Station Operators Waiting for Additional EVR Options

The first EVR Phase II system was certified in 2005. There are several reasons why many GDF operators have waited to start the process for the EVR Phase II upgrade. These include waiting for additional EVR Phase II systems to be certified, especially a balance system with ISD. In addition, station operators believe there is still plenty of time to get these upgrades started, or if there isn't, then ARB will extend the deadline. More discussion on each of these points is provided below.

1. Waiting for an EVR Phase II balance system with ISD option

As mentioned earlier, equipment changes associated with ORVR compatibility compliance in 2006 resulted in approximately 90 percent balance Phase II systems statewide. Many station operators prefer balance systems as they do not have the dispenser vapor pumps associated with assist systems and thus are viewed as lower maintenance and less costly systems. Although the first EVR Phase II system – the Healy assist system - was certified in 2005, most station owners preferred to do "stepwise" compliance, assuming that a balance EVR Phase II system would be cheaper in the long run.

Although several EVR balance vapor recovery certification applications have been submitted over the last few years, the first EVR Phase II balance system, manufactured by Vapor Systems Technologies (VST), was not certified until November 5, 2007. This first VST certification did not include the ISD option. The VST EVR balance system with ISD was recently certified on April 1, 2008. Thus staff expects that many stations that have been waiting for the balance system with ISD option will now initiate the EVR Phase II upgrade process.

2. Waiting for additional EVR systems to be certified

Equipment manufacturers who are still seeking EVR Phase II system certifications have been touting their proposed systems at trade shows, through product literature, and via their distribution channels. The story told is that the ARB certification for their system is just around the corner, and station owners should wait until their new, better and cheaper system is available.

ARB staff has worked tirelessly with these manufacturers to get their equipment into test stations and begin certification testing. The certification operational test is a minimum of 180 days as provided in ARB's regulations. Unfortunately, many systems have had their certification tests terminated due to failure to meet EVR standards. ARB staff continues to work with these manufacturers, but due to the

time involved in the certification process, there will not be a third EVR Phase II system certified until at least 4th quarter 2008.

3. Thinking there is still plenty of time to complete the upgrade

Station owners who have gone through the two previous vapor recovery equipment upgrades may think they have plenty of time to initiate and complete the EVR Phase II upgrade by April 2009. Experience with installations thus far shows that the EVR Phase II upgrade is more complex and lengthy for several reasons, mostly related to the installation and permitting of the pressure management unit or vapor processor associated with EVR Phase II. These installation and permitting issues are discussed later in this report, but suffice it to say that it may take several months for the EVR Phase II upgrades, while previous upgrades may have been on the order of weeks.

4. Thinking that the April 2009 deadline will be extended

The compliance dates for different phases of the EVR program have been extended several times, either by rulemaking or Executive Officer action. In most cases, these extensions were triggered by unforeseen delays in getting EVR systems certified. Because of these past actions, many GDF operators may assume that the April 2009 deadline will be extended.

The last two ARB EVR advisories have specifically stated that the April 2009 deadline will not be extended. This message has been repeated in various outreach forums, email inquiries and telephone calls. Advisory 373, issued April 4, 2008, outlined possible enforcement actions, such as shutting down the station, and the substantial penalties that may be imposed if operation continues beyond April 2009 without an EVR Phase II system (Appendix 2).

The California Air Pollution Control Officers Association urged adherence to the April 2009 deadline in a November 12, 2007 letter to James Goldstene (Appendix 3). A letter from a major oil company received on November 15, 2007 echoed maintenance of the April 2009 deadline, barring unforeseen delays in permitting and inspection processes (Appendix 4). This oil company stated that “all owners and operators should be held to the same standard. Those that choose to procrastinate, hoping for a compliance extension, should not be rewarded.”

B. Vapor Recovery System Equipment Availability

The concern has been raised as to whether the two manufacturers of the currently certified EVR Phase II systems can supply enough vapor recovery equipment to all the GDFs in the state. Both Franklin Fueling (Healy) and Vapor Systems Technologies (VST) have built up inventories of EVR equipment and will increase production as necessary.

ARB staff is monitoring availability of EVR equipment through regular reporting from both Healy and VST. Figure 3 below shows that both the Healy and VST processor units are in stock and ready for shipment.

Figure 3
Inventory of Healy and VST Vapor Processors

The EVR program contains a safety valve which allows the Executive Officer to extend compliance dates if certified equipment is not commercially available. As per regulation, systems are deemed commercially available if the system can be shipped within eight weeks of the receipt of an order by the equipment manufacturer. A form to report unavailability of EVR equipment to ARB is posted on the ARB website (Appendix 6). At this time, both Franklin Fueling and VST are shipping equipment within one week of order receipt.

C. Contractor Availability

Contractors installing EVR equipment must be certified by the EVR system manufacturer. Certification training is offered at locations throughout the state, normally through a 4 hour or 8 hour class. The list of certified manufacturers is provided on the manufacturer's websites and is also linked to the ARB web pages. The total number of certified contractors for each manufacturer in California as of March 2008 is provided in Table 2.

Table 2
Number of EVR Certified Contractors for EVR Phase II and ISD Systems

	Franklin/ Healy	**VST**	**Veeder-Root** (ISD)	**Franklin INCON** (ISD)
Number of Certified Contractors	**1205**	**35**	**512**	**92**

Note that the low number of VST contractors is due to the recent certification of the VST with ISD system on April 1, 2008. The number of VST contractors is expected to grow rapidly over the next few months.

ARB staff has sorted the contractors for Franklin/Healy Phase II and Veeder-Root ISD by district to investigate whether contractors for each system are available throughout the state. The results show that some of the smallest air districts may not have contractors operating in their districts, but there are contractors in neighboring districts available. In general, the contractor distribution mirrors the GDF population.

D. Permitting Delays

The upgrade for EVR Phase II generally requires permits from additional local agencies that were not involved in the previous EVR Phase I and ORVR compatibility upgrades. This is due to the pressure management systems or vapor processors associated with the EVR Phase II systems. Installations of the Franklin/Healy Clean Air Separator, both vertical and horizontal configurations, and the VST membrane processor are shown below.

Healy Clean Air Separators **VST**

The additional local permits that may be required for installation of EVR vapor processors are from county and city planning and building departments. This is in addition to the air district, fire agency and possibly environmental health agency permits. Our experience with initial installations of EVR Phase II systems revealed that many of these permitting agencies are not familiar with vapor recovery requirements, which has led to long application and design reviews, sometimes on the order of months. In addition, some local planning and building agencies have taken opportunity of the EVR review and permit application to include additional requirements, such as landscaping or enclosures to hide equipment, which can increase costs even further.

Education of these local permitting agencies is a high priority of both ARB and local district staff. Special outreach events for these agencies have already been

held in the Bay Area and San Joaquin valley and several more are planned. Staff meets regularly with contractors who pull permits for GDF operators to understand where the delays are occurring and learn which agencies may benefit from EVR education. As a result of ARB and district efforts thus far, several local planning agencies have taken action to clarify their requirements and work cooperatively with their sister agencies to help expedite permitting of EVR upgrades.

Staff recognizes that the potential for delays due to the local permitting process is a real concern and will continue to monitor the situation closely. Staff's progress report in October 2008 will evaluate whether the permitting process will prevent compliance with the April 2009 deadline.

E. Cost of EVR Equipment Upgrades

The estimated equipment and installation cost for the Franklin/Healy Veeder-Root EVR Phase II/ISD system is provided in Table 3. The cost estimates for the Franklin/Healy EVR Phase II system are from a 2007 cost spreadsheet provided by Franklin. If the cost estimates from the February 4, 2000 EVR staff report are adjusted to 2007 dollars by multiplying by the ratio of the 2007/1999 Consumer Price Index (207.342/166.6 or 1.24), then the 2007 estimates are very close to the original staff estimates.

The cost estimates for ISD are taken from the ARB April 2007 staff report, "Cost Analysis for In-Station Diagnostics (ISD) at Gasoline Dispensing Facilities" that was provided to the Board last year.

These estimated costs are in line with actual contractor cost bids provided to staff. These estimates do not include the costs of the various local permits, installation of additional electrical lines (if needed) or start-up tests. Although no data is available yet for VST system installations, staff expects that the costs will be comparable.

Table 3
Estimated Equipment and Installation Costs for EVR Phase II and ISD

	Number of Dispensers			
	2	4	6	12
EVR Phase II	$17,240	$24,925	$32,765	$56,285
ISD	$13,600	$16,500	$19,700	$28,900
TOTAL (rounded to nearest $100)	**$30,800**	**$41,400**	**$52,500**	**$85,200**

GDF operators have complained that these costs are unreasonable, especially given today's financial markets and slim retail margins for gasoline. Many are hoping that a lower cost system may become available before the deadline.

IV. PROCESS TO MONITOR IMPLEMENTATION PROGRESS

A. Updates from Districts on Permits and Installations

ARB and local air district staff are working together to monitor progress towards meeting the April 2009 deadline. Although some districts are already providing regular updates, monthly reports from all districts were requested in a letter to all APCOs dated March 26, 2008 (Appendix 5). The minimum data requested are the total number of GDFs subject to EVR Phase II requirements, the number of facilities who have submitted permit applications for the upgrade, and the number of GDFs who are currently operating with EVR Phase II systems.

B. Monitor Equipment Production and Orders

ARB staff checks in with EVR and ISD manufacturers on a regular basis as to equipment inventory, production forecasts, number of back-orders and time needed to fill equipment orders. Most of this information is business confidential and cannot be listed here, but as already mentioned above, EVR and ISD equipment orders are being filled by the manufacturers within one week. A form posted on the ARB website is available for a GDF operator to notify ARB if a vapor recovery system is not available in time to meet a rule or construction deadline (see Appendix 6).

C. Monitor Number of Certified Contractors

EVR manufacturers provide required training for installation contractors throughout the state. Lists of certified contractors are available on the EVR system manufacturer websites, which are linked to the ARB website for convenience.

D. Critical Path for EVR Phase II

There are an estimated 12,000 GDFs that must install Phase II EVR in the next 11 months. Assuming one week to complete the upgrade, and 1200 certified contractors for the Franklin Healy system, mathematically there is current contractor capability to install around 1000 EVR systems a week. Even if this translates to 1000 EVR systems a month in reality, this is still sufficient time to complete the upgrades.

EVR system manufacturer current production levels, together with contingency plans to increase production as needed are projected to supply sufficient equipment to complete the upgrades.

The critical path limiting factor appears to be the ability to complete the permitting process with all local agencies within a reasonable time period.

V. ACTIONS TAKEN TO EXPEDITE EVR IMPLEMENTATION

A. Outreach and Communication

ARB staff and districts have worked together over the last several years to provide regular communication on EVR activities with EVR stakeholders. These communications include:

1. Public workshops and informational meetings
2. EVR advisories
3. Vapor recovery websites
4. Vapor recovery email listserve
5. EVR color brochure (Appendix 7)
6. Conference and tradeshow Exhibits
7. Meetings with gasoline marketers
8. Meetings with permitting contractors
9. Conversations with GDF operators during annual inspections

Staff has also set up a new website focusing on materials to educate local permitting agencies on EVR requirements and understanding EVR systems. This website, www.evrhome.org, was launched in late 2007 and already has been well-received by local agency staff who have no previous knowledge of the vapor recovery program.

B. Early Permit Application

Several districts have taken steps to encourage or require early submittal of air district permit applications for EVR upgrades. For example, Sacramento Metro AQMD waived the application permit fee if the application was received by April 1, 2008, and construction completed by October 1, 2008. This incentive is believed responsible for SMAQMD having the highest percentage of permits issued thus far. Other districts, such as San Diego APCD and South Coast AQMD, modified their rules to require permit applications or compliance plans for EVR Phase II systems to be submitted by October 1, 2008.

C. Contract with Local Agency Experts

ARB staff contracted with two local agency experts, Norm Covell and Mel Knight, to provide assistance in EVR implementation. The tasks for the short-term contract were as follows:

1. Identify local permit agencies involved in EVR upgrades statewide.
2. Assess and prioritize barriers to meeting EVR deadlines.
3. Recommend strategies for permit streamlining.
4. Develop plan for outreach to local permit agencies.

The contract reports (Appendices 8 and 9) contain several recommendations to address local permitting issues. ARB staff is pursuing several of the recommended actions.

D. Exemption for ORVR Vehicle Fleets

Several districts (i.e., Bay Area, San Diego, San Joaquin and South Coast) have amended or are planning to amend their rules to allow Phase II vapor recovery exemptions for GDFs that dispense only to high percentage ORVR vehicle fleets. This exemption is allowed by USEPA and encouraged by ARB as outlined in ARB's letter of February 20, 2008 (Appendix 8). This exemption will reduce the total number of GDFs subject to the EVR upgrade, though the number of sites qualifying for the exemption is likely small.

VI. ACTIONS PLANNED REGARDING EVR IMPLEMENTATION

A. Expand Outreach to Local Planning and Building Agencies

ARB staff plans to work with the air districts in educating the local city and county planning agencies and develop mechanisms to streamline EVR permitting.

B. Continue Monitoring EVR Implementation Progress

ARB staff will continue to collect data from local districts, EVR manufacturers and GDF operators on progress towards compliance with the April 2009 deadline.

C. Share EVR Implementation Status with Stakeholders

Staff will share information in this report and request feedback in a workshop scheduled for May 14, 2008, in Sacramento.

D. Provide EVR Status Report to Board in October 2008

ARB staff will continue to provide regular updates to the Board chair through normal internal communications. A second status report will be provided in October 2008.

VII. RECOMMENDATION

Staff recommends no extension to the EVR Phase II deadline. As discussed in this report, there is still sufficient time and resources available for the remaining 12,000 GDFs to complete the EVR Phase II upgrade by the April 1, 2009 deadline.